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10/624,511	07/23/2003	Giuseppe Cereda	Q76191	7413

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EXAMINER	
HAILE, FEBEN	
ART UNIT	PAPER NUMBER
2416	
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07/21/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/624,511	CEREDA ET AL.	
	Examiner	Art Unit	
	FEBEN HAILE	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 23, 2009 has been entered.

Response to Amendment

2. In view of applicant's amendment filed, the status of the application is still pending with respect to claims 1-20.

3. The amendment filed is insufficient to overcome the rejection of claims 1-11 based upon newly discovered reference Siu (US 4,794,771) in combination with previously cited art, as set forth in this new Office action because: the newly added claims fail to further clarify a distinction between the Applicants invention and the cited references, thus the subject matter is not patentable.

Response to Arguments

4. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-4, 6-11, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawdey et al. (US 2003/0179052), hereinafter referred to as Sawdey, Siu (US 4,794,771), hereinafter referred to as Siu, in view of Tsunoda et al. (US 2002/050873), hereinafter referred to as Tsunoda.

Regarding claim 1, Sawdey discloses a manifold **(figure 1 and page 2 paragraph 0015; a manifold 36)**, filter ports and filter means, with each filter being connected to the manifold at a corresponding one of said ports **(figure 1 and page 2 paragraph 0015; bandpass filters 56, 58, and 40 are connected to the manifold 36 through input/output ports)**, wherein said filter means comprises: at least one filter comprising a first resonant cavity and a further resonant cavity **(figure 2 and page 2 paragraph 0018; the bandpass filters may be constructed with two cavities)**.

Sawdey fails to explicitly suggest at least one filter head separate from said filter having only a single resonant cavity which has the same structure as the first resonant cavity of said at least one filter, wherein said at least one filter head is configured as to be selectively connectable either to a corresponding covering for short circuit purposes or to a filter tail in order to provide full filter functionality.

Siu teaches at least one filter head separate from said filter having only a single resonant cavity which has the same structure as the first resonant cavity of said at least one filter **(figure 3; a filter 28 has a single cavity 4)**, wherein said at least one filter head is configured connectable to either a corresponding covering for short circuit purposes or to a filter tail in order to provide full filter functionality **(figure 4; the filter 28 is mounted in cascade with a cavity 38 in order to provide a filter 36 with dual mode functionality)**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the quadruple mode filter taught by Siu into the multiple channel routing multiplexer disclosed by Sawdey. The motivation for such a modification is significant weight and volume saving as suggested by column 7 lines 39-54 of Siu.

Sawdey, Siu, and/or their combination fail to explicitly suggest selectively connecting.

Tsunoda teaches selectively connecting **page 1 paragraph 0011 and page 2 paragraphs 0016-0017; a filtering device including a switch for selectively operating in an open or short circuit manner)**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the method of the filtering device taught by Tsunoda into the multiple channel routing multiplexer disclosed by Sawdey as modified by the quadruple mode filter taught by Siu. The motivation for such a modification is an

improved filtering device in a form with a reduced size at a low cost without having to use conventional circuit elements as suggested by page 1 paragraph 0010 of Tsunoda.

Regarding claim 2, Sawdey discloses wherein the at least one filter head comprises at least a first coupling in addition to said first cavity **(figure 3 and page 2 paragraph 0018; each bandpass filter includes a cavity and a coupling aperture)**.

Regarding claim 3, Sawdey discloses wherein the at least one filter head further comprises a second coupling **(figure 3 and page 2 paragraph 0018; each bandpass filter includes a cavity and a coupling aperture; it would have been obvious to one having ordinary skill in the art at the time the invention was made that since the filter 40 connects to the manifold 36 and the manifold 34 there would have to be 2 coupling apertures).**

Regarding claim 4, Sawdey discloses wherein the at least one filter head is an integral part of the manifold **(figure 1 and page 2 paragraph 0015; bandpass filter 40 interconnects the manifold 36 to the manifold 34)**.

Regarding claim 6, Sawdey discloses a manifold **(figure 1 and page 2 paragraph 0015; a manifold 36)**, filter ports and filter means, with each filter being connected to the manifold at a corresponding one of said ports **(figure 1 and page 2 paragraph 0015; bandpass filters 56, 58, and 40 are connected to the manifold 36 through input/output ports)**, wherein said filter means comprises: at least one filter comprising a first resonant cavity and a further resonant cavity **(figure 2 and page 2 paragraph 0018; the bandpass filters may be constructed with two cavities)**.

Sawdey fails to explicitly suggest at least one filter head separate from said filter and having only a single resonant cavity which has the same structure as the first resonant cavity of said at least one filter, wherein said at least one filter head is configured as to be selectively connectable either to a corresponding covering for short circuit purposes or to a filter tail in order to provide full filter functionality.

Siu teaches at least one filter head separate from said filter and having only a single resonant cavity which has the same structure as the first resonant cavity of said at least one filter **(figure 3; a filter 28 has a single cavity 4)**, wherein said at least one filter head is configured as to be selectively connectable either to a corresponding covering for short circuit purposes or to a filter tail in order to provide full filter functionality **(figure 4; the filter 28 is mounted in cascade with a cavity 38 in order to provide a filter 36 with dual mode functionality)**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the quadruple mode filter taught by Siu into the multiple channel routing multiplexer disclosed by Sawdey. The motivation for such a modification is significant weight and volume saving as suggested by column 7 lines 39-54 of Siu.

Sawdey, Siu, and/or their combination fail to explicitly suggest wherein said at least one filter head is configured as to be selectively connectable either to a corresponding covering for short circuit purposes or to a filter tail in order to provide full filter functionality.

Tsunoda teaches wherein said at least one filter head is configured as to be selectively connectable either to a corresponding covering for short circuit purposes or to a filter tail in order to provide full filter functionality **(page 1 paragraph 0011 and page 2 paragraphs 0016-0017; a filtering device including a switch for selectively operating in an open or short circuit manner)**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the method of the filtering device taught by Tsunoda into the multiple channel routing multiplexer disclosed by Sawdey as modified by the quadruple mode filter taught by Siu. The motivation for such a modification is an improved filtering device in a form with a reduced size at a low cost without having to use conventional circuit elements as suggested by page 1 paragraph 0010 of Tsunoda.

Regarding claim 7, Sawdey discloses wherein the at least one filter head comprises at least a first coupling in addition to said first cavity **(figure 3 and page 2 paragraph 0018; each bandpass filter includes a cavity and a coupling aperture)**.

Regarding claim 8, Sawdey discloses wherein the at least one filter head further comprises a second coupling **(figure 3 and page 2 paragraph 0018; each bandpass filter includes a cavity and a coupling aperture; it would have been obvious to one having ordinary skill in the art at the time the invention was made that since the filter 40 connects to the manifold 36 and the manifold 34 there would have to be 2 coupling apertures**

Regarding claim 9, Sawdey discloses wherein the at least one filter head is an integral part of the manifold **(figure 1 and page 2 paragraph 0015; bandpass filter 40 interconnects the manifold 36 to the manifold 34)**.

Regarding claim 10, Sawdey discloses the at least one filter head is made through standard waveguide technology, and the corresponding at least one filter tail is made by a technology selected from the group consisting H-plane technology and DR technology to make the device more compact **(page 2 paragraph 0017; each manifold is constructed of a section of a waveguide of rectangular cross-section; as the claims are interpreted in their broadest sense, the Examiner believes that the waveguide could have been implanted using a standard technology H-Plane)**.

Regarding claim 11, Sawdey discloses a branching unit comprising one or more reconfigurable multiplexers **(figure 1 and page 2 paragraph 0014; a satellite carries electronic equipment that includes a multiplexer with interconnect able manifolds)**.

Regarding claim 20, Sawdey discloses the at least one filter head is made through standard waveguide technology, and the corresponding at least one filter tail is made by a technology selected from the group consisting H-plane technology and DR technology to make the device more compact **(page 2 paragraph 0017; each manifold is constructed of a section of a waveguide of rectangular cross-section; as the claims are interpreted in their broadest sense, the Examiner believes that the waveguide could have been implanted using a standard technology H-Plane)**.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sawdey et al. (US 2003/0179052), in view of Siu (US 4,794,771), in view of Tsunoda et al. (US 2002/050873), and further in view of Fiedziuszko et al. (US 6,472,951), hereinafter referred to as Fiedziuszko.

Regarding claim 5, Sawdey as modified by Siu and Tsunoda disclose the limitations of the base claim.

Sawdey, Siu, Tsunoda, and/or their combination fail to explicitly suggest wherein the covering plate is at a distance with respect to the manifold axis.

Fiedziuszko teaches wherein the covering plate is at a distance with respect to the manifold axis **(figure 1 and column 2 lines 39-46; a multiplexer assembled with waveguides, including cavity filters, coupled to a manifold, column 2 lines 60-62; where the waveguides are positioned along the longitudinal dimension of the manifold at distances z, y, and z, respectively from a short 18)**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the manifold spacing adjustment taught by Fiedziuszko into the multiple channel routing multiplexer disclosed by Sawdey as modified by the quadruple mode filter taught by Siu and the method of the filtering device suggested by Tsunoda. The motivation for such a modification is to assist in the tuning of the overall system thereby optimizing performance of the multiplexer while minimizing losses as suggested by column 1 lines 48-51 of Fiedziuszko.

7. Claims 12-14 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawdey et al. (US 2003/0179052), hereinafter referred to as Sawdey, in view of Langer et al. (US 5,274,344), hereinafter referred to as Langer, in view of Siu (US 4,794,771), hereinafter referred to as Siu.

Regarding claim 12, Sawdey discloses a first filter **(figure 1 page 2 paragraph 0015; bandpass filters 56, 58, and 40)** comprising a first resonant cavity and a further resonant cavity **(figure 2 and page 2 paragraph 0018; the bandpass filters may be constructed with two cavities)**, and a filter head having a single resonant cavity **(figure 2 and page 2 paragraph 0018; the filter is separated into two parts by a transverse wall, with each side having a cavity, i.e. it would have been obvious to one having ordinary skill in the art at the time the invention was made that the filter 40 separated into two parts by a transverse wall could be a filter head and a filter tail)**.

Sawdey fails to explicitly suggest said first filter being suitable for filtering a first channel and wherein said second filter is suitable for filtering a second channel and wherein said covering plate is removable from said filter head and wherein, when said covering plate is removed from said filter head.

Langer teaches said first filter being suitable for filtering a first channel and wherein said second filter is suitable for filtering a second channel **(column 1 lines 41-43; a frequency separating filter including a plurality of individual filters each for a different frequency channel)** and wherein said covering plate is removable from said filter head and wherein **(column 1 lines 44-45; terminating a feeder wave guide of a**

filtering unit with a short circuit), when said covering plate is removed from said filter head **(column 2 lines 23-28; removing the short circuit)**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the branch separating unit taught by Langer into the multiple channel routing multiplexer disclosed by Sawdey as modified by the branch separating filter suggested by Langer. The motivation for such a modification is a branch separating unit in a GHz frequency range such that undesirable high insertion losses are avoided as suggested by Langer in column 1 lines 38-40 of Langer.

Sawdey, Langer, and/or their combination fail to explicitly suggest a filter head separate from said first filter and having a single resonant cavity, and a covering plate connected to said filter head for short circuit purposes, wherein said covering plate is removable from said filter head and wherein, when said covering plate is removed from said filter head, said filter head is connectable to a filter tail, wherein said filter head and filter tail form a second filter, and wherein said second filter is suitable for filtering a second channel.

Siu teaches a filter head separate from said first filter and having a single resonant cavity **(figure 3; a filter 28 has a single cavity 4)**, and a covering plate connected to said filter head for short circuit purposes **(figure 3; an iris 16 covering the filter 28)**, said filter head is connectable to a filter tail **(figure 4; the filter 28 is mounted in cascade with a cavity 38)**, wherein said filter head and filter tail form a second filter **(figure 4; in order to provide a filter 36 with dual mode functionality)**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the quadruple mode filter taught by Siu into the multiple channel routing multiplexer disclosed by Sawdey as modified by the branch separating unit suggested by Langer. The motivation for such a modification is significant weight and volume saving as suggested by column 7 lines 39-54 of Siu.

Regarding claim 13, Sawdey discloses wherein the at least one filter head comprises at least a first coupling in addition to said first cavity **(figure 3 and page 2 paragraph 0018; each bandpass filter includes a cavity and a coupling aperture)**.

Regarding claim 14, Sawdey discloses wherein the at least one filter head further comprises a second coupling **(figure 3 and page 2 paragraph 0018; each bandpass filter includes a cavity and a coupling aperture; it would have been obvious to one having ordinary skill in the art at the time the invention was made that since the filter 40 connects to the manifold 36 and the manifold 34 there would have to be 2 coupling apertures).**

Regarding claim 16, Sawdey discloses providing a first filter **(figure 1 page 2 paragraph 0015; bandpass filters 56, 58, and 40)** comprising a first resonant cavity and a further resonant cavity **(figure 2 and page 2 paragraph 0018; the bandpass filters may be constructed with two cavities)**, and providing a filter head having a single resonant cavity **(figure 2 and page 2 paragraph 0018; the filter is separated into two parts by a transverse wall, with each side having a cavity, i.e. it would have been obvious to one having ordinary skill in the art at the time the invention**

was made that the filter 40 separated into two parts by a transverse wall could be a filter head and a filter tail).

Sawdey fails to explicitly suggest said first filter being suitable for filtering a first channel and wherein said second filter is suitable for filtering a second channel and wherein said covering plate is removable from said filter head and wherein, when said covering plate is removed from said filter head.

Langer teaches said first filter being suitable for filtering a first channel and wherein said second filter is suitable for filtering a second channel **(column 1 lines 41-43; a frequency separating filter including a plurality of individual filters each for a different frequency channel)** and wherein said covering plate is removable from said filter head and wherein **(column 1 lines 44-45; terminating a feeder wave guide of a filtering unit with a short circuit)**, when said covering plate is removed from said filter head **(column 2 lines 23-28; removing the short circuit)**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the branch separating unit taught by Langer into the multiple channel routing multiplexer disclosed by Sawdey as modified by the branch separating filter suggested by Langer. The motivation for such a modification is a branch separating unit in a GHz frequency range such that undesirable high insertion losses are avoided as suggested by Langer in column 1 lines 38-40 of Langer.

Sawdey, Langer, and/or their combination fail to explicitly suggest a filter head separate from said first filter and having a single resonant cavity, and a covering plate connected to said filter head for short circuit purposes, wherein said covering plate is

removable from said filter head and wherein, when said covering plate is removed from said filter head, said filter head is connectable to a filter tail, wherein said filter head and filter tail form a second filter, and wherein said second filter is suitable for filtering a second channel.

Siu teaches a filter head separate from said first filter and having a single resonant cavity **(figure 3; a filter 28 has a single cavity 4)**, and a covering plate connected to said filter head for short circuit purposes **(figure 3; an iris 16 covering the filter 28)**, said filter head is connectable to a filter tail **(figure 4; the filter 28 is mounted in cascade with a cavity 38)**, wherein said filter head and filter tail form a second filter **(figure 4; in order to provide a filter 36 with dual mode functionality)**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the quadruple mode filter taught by Siu into the multiple channel routing multiplexer disclosed by Sawdey as modified by the branch separating unit suggested by Langer. The motivation for such a modification is significant weight and volume saving as suggested by column 7 lines 39-54 of Siu.

Regarding claim 17, Sawdey discloses wherein the at least one filter head comprises at least a first coupling in addition to said first cavity **(figure 3 and page 2 paragraph 0018; each bandpass filter includes a cavity and a coupling aperture)**.

Regarding claim 18, Sawdey discloses wherein the at least one filter head further comprises a second coupling **(figure 3 and page 2 paragraph 0018; each bandpass filter includes a cavity and a coupling aperture; it would have been obvious to one having ordinary skill in the art at the time the invention was made**

that since the filter 40 connects to the manifold 36 and the manifold 34 there would have to be 2 coupling apertures).

Regarding claim 19, Sawdey discloses wherein the at least one filter head is an integral part of the manifold **(figure 1 and page 2 paragraph 0015; bandpass filter 40 interconnects the manifold 36 to the manifold 34)**.

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sawdey et al. (US 2003/0179052), in view of Langer et al. (US 5,274,344), in view of Siu (US 4,794,771), and further in view of Fiedziuszko et al. (US 6,472,951), hereinafter referred to as Fiedziuszko.

Regarding claim 15, Sawdey as modified by Langer disclose the limitations of the base claim.

Sawdey, Langer, Siu and/or their combination fail to explicitly suggest wherein the covering plate is at a distance with respect to the manifold axis.

Fiedziuszko teaches wherein the covering plate is at a distance with respect to the manifold axis **(figure 1 and column 2 lines 39-46; a multiplexer assembled with waveguides, including cavity filters, coupled to a manifold, column 2 lines 60-62; where the waveguides are positioned along the longitudinal dimension of the manifold at distances z, y, and z, respectively from a short 18)**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the manifold spacing adjustment taught by Fiedziuszko into the multiple channel routing multiplexer disclosed by Sawdey as

modified by the branch separating filter suggested by Langer and the quadruple mode filter taught by Siu . The motivation for such a modification is to assist in the tuning of the overall system thereby optimizing performance of the multiplexer while minimizing losses as suggested by column 1 lines 48-51 of Fiedziuszko.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FEBEN HAILE whose telephone number is (571)272-3072. The examiner can normally be reached on 10:00 am-6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Aung Moe can be reached on (571)272-7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aung S. Moe/
Supervisory Patent Examiner, Art Unit 2416

/FEBEN HAILE/
Examiner, Art Unit 2416